HEALTH SYSTEMS AND POLICY ANALYSIS

POLICY BRIEF

# Moving towards a resilient health and care workforce

## How to institutionalize health workforce planning and forecasting

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DRAFT

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A policy brief is a short publication specifically designed to provide policy makers with evidence on a policy question or priority. Policy briefs

- Bring together existing evidence and present it in an accessible format
- Use systematic methods and make these transparent so that users can have confidence in the material
- Tailor the way evidence is identified and synthesised to reflect the nature of the policy question and the evidence available
- Are underpinned by a formal and rigorous open peer review process to ensure the independence of the evidence presented.

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Policy briefs provide evidence for policymakers not policy advice. They do not seek to explain or advocate a policy position but to set out clearly what is known about it. They may outline the evidence on different prospective policy options and on implementation issues, but they do not promote a particular option or act as a manual for implementation.

**This policy brief is one of a new series to meet the needs of policy-makers and health system managers. The aim is to develop key messages to support evidence-informed policy-making and the editors will continue to strengthen the series by working with authors to improve the consideration given to policy options and implementation.**



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## Contents



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## Acknowledgements

TO BE COMPLETED UPON STAKEHOLDER AGREEMENT

## List of boxes

Boxes



9

## List of abbreviations

| | |
|---|---|
| **AAAQ** | Availability, Accessibility, Acceptability, Quality of the HCWF framework |
| **ACMMP** | Advisory Committee for Medical Manpower Planning, Capaciteitsorgaan, the Netherlands |
| **AGENAS** | National Agency for Regional Health Services, Italy |
| **AI** | Artificial Intelligence |
| **ARS** | Regional Health Agencies |
| **EU** | European Union |
| **GSHRH** | Global Strategy on Human Resources for Health |
| **HCW** | Health and Care Workers |
| **HCWF** | Health and Care Workforce |
| **HRH** | Human Resources for Health |
| **HEE** | Health Education England |
| **HEROES** | HEalth woRkfOrce to meet health challEngeS, EU Joint Action |
| **HLM** | Health Labour Market |
| **HLMA** | Health Labour Market Analysis |
| **HRHIS** | Health Workforce Information Systems |
| **ILO** | International Labour Office |
| **IPE** | Interprofessional Education |
| **ISCO-08** | International Standard Classification of Occupations |
| **IT** | Information Technologies |
| **NGO** | Non-governmental Organisation |
| **NHS** | National Health Service |
| **NIVEL** | Netherlands Institute for Health Research |
| **PlanCad** | Planning Commission for the Supply of Medical Professionals, Belgium |
| **ONDP** | Observatoire National de la Démographie des Professions de Santé, France |
| **SALAR** | Swedish Union of Employers |
| **SHI** | Social Health Insurance |
| **WHO** | World Health Organization |
| **WISN** | Workforce Indicators of Staffing Needs |

## Key messages

TO BE COMPLETED UPON STAKEHOLDER AGREEMENT

## Executive summary

TO BE COMPLETED UPON STAKEHOLDER AGREEMENT

# POLICY BRIEF

## 1. Introduction

A well-trained and adequately staffed health and care workforce (HCWF) is the backbone of resilient health systems, a safeguard for health security, and a driver of social and economic stability. The COVID-19 pandemic exposed vulnerabilities in workforce preparedness, but also highlighted that proactive, coordinated planning can protect health systems from both sudden crises and long-term pressures. Without it, countries risk being unprepared to meet population health needs, respond to emergencies, or adapt to changing demands.

Today, countries face a worsening global HCWF-crisis that is driven by ageing populations, shifting disease patterns, growing service demands, and workforce attrition. Shortages are particularly acute in rural and remote areas, and in health systems that are understaffed and underfunded. This threatens universal health coverage (UHC), equity and gender equality, and access to care, with the most severe impacts felt by vulnerable groups such as migrants, minorities, socially deprived populations, older people, and women – who are both overrepresented in the HCWF and disproportionately affected by service gaps. The HCWF crisis also undermines trust in institutions, weakens social cohesion, and can threaten political stability.

HCWF planning and forecasting is central to addressing these challenges. Reliable forecasts, created using high-quality data enable countries to anticipate needs, allocate resources effectively, and align training, recruitment, and retention strategies with evolving health priorities. However, forecasting alone is not enough. Without robust institutional frameworks, capacity and strong governance, projections risk remaining theoretical and end up failing to influence real-world outcomes.

The institutionalisation of HCWF planning and forecasting ensures that these processes are not one-off exercises but continuous, adaptive, and embedded in governance structures. Strong institutions translate evidence into actionable policy, coordinate the diverse actors involved, i.e. governments, professional associations, training providers, and other stakeholders, and ensure that workforce strategies remain aligned with health system needs over time. Institutionalisation provides the stability, accountability, and cross-sectoral collaboration necessary for sustained progress.

Capacity for HWF planning and forecasting is equally essential. Skilled personnel, adequate resources, and interoperable data systems enable countries to produce accurate projections, regularly review and adapt them, and integrate them into broader health system strategies. Without capacity, even the best institutional arrangements cannot deliver effective workforce planning.

Alongside institutionalisation and capacity, effective governance is the glue that holds the system together. Clear governance structures ensure that responsibilities are defined, stakeholder engagement is consistent, and decision-making is transparent. Governance frameworks anchor HCWF planning in national and regional priorities, foster accountability, and maintain the political will needed to drive implementation.

In an era of global "permacrises", resilient and equitable health systems depend on a stable, well-prepared HCWF. Institutionalising HCWF planning and forecasting, strengthening capacity, and embedding these processes in strong governance frameworks are essential steps for European Union (EU) Member States to address current shortages, prepare for future challenges, and ensure that every person has access to quality healthcare.

**BOX 1: Research questions**

This Policy Brief answers three main research questions:

- What are the policy options for institutionalising HCWF planning and forecasting?
- What capacity is needed for HCWF planning and forecasting?
- How to govern HCWF planning and forecasting?

**BOX 2: Methods in brief**

Evidence for the policy brief is drawn from previous deliverables of the HEROES Joint Action project (HEROES JA, 2023, 2024, n.y.) and the SEPEN Joint Action. A rapid scoping review of the available reports and grey and peer-reviewed literature was carried out and a narrative synthesis drawn with a focus on existing approaches and institutions for HCWF forecasting and planning (Section 2), available policy options for organising (Section 3) and building capacities for institutionalising monitoring analysis, forecasting, and planning of the HCWF (Section 4), and strategies for governing and implementing institutions that monitor, analyse, and forecast (Section 5). Additionally, we drew from selected case studies across countries included in the HEROES Joint Action project that were prepared by project members.

**BOX 3: Definitions as they are used in this brief**

***Institutionalisation*** refers to embedding health workforce planning and forecasting into formal and durable structures of governance, supported by legal frameworks, mandates, and sustainable funding (WHO, 2016; WHO Europe, 2022a; Correia et al., 2025).

***Capacity*** describes the tools, skills, knowledge, infrastructure, and human resources required to carry out effective HCWF planning and forecasting. This includes technical instruments (like Health labour Market Analysis [HLMA], Workforce Indicators of Staffing Needs [WISN], and forecasting models), skilled professionals (policy analysts, statisticians, IT experts, qualitative researchers), and organisational infrastructure (registries, Health Workforce Information Systems [HRHIS], interoperable IT systems). Capacity is what makes institutional structures operationally effective rather than symbolic (WHO, 2022; Zapata et al., 2023; Azzopardi-Muscat et al., 2023; Correia et al., 2020).

***Governance*** is "the systematic, patterned way in which decisions are made and implemented" (Greer et al., 2019, pg. 4). In the context of HCWF, governance refers to the arrangements, processes, and relationships through which governments, agencies, and stakeholders set priorities, coordinate action, allocate resources, and monitor outcomes. It determines who has authority, how responsibilities are distributed, how stakeholders are involved, and how transparency, accountability, and equity are ensured.

## 2. What are the policy options for institutionalising HCWF planning and forecasting?

### Rationale for institutionalisation

#### *Institutionalisation turns planning into a continuous, adaptive process*

Institutionalisation paves the way for bringing evidence into practice. It involves more than embedding a new process into a system, rather it is about creating durable systems that ensure health workforce planning and forecasting are continuously updated, adapted, and implemented in ways that improve population health and strengthen system resilience. By rooting HCWF planning (Bernini et al., 2024; Lee et al., 2024; Kroezen et al., 2018; Girasek et al., 2016) within formal governance structures, it is ensured that countries are able to collect data, analyse it and develop scenarios out of that analysis so that they can be systematically translated into policy action. This also allows for countries to respond to changing conditions with agility and speed.

Without such institutional frameworks, valuable tools (HLMA, WISN, Availability, Accessibility, Acceptability, Quality of the HCWF framework [AAAQ], AI-based models) remain underused and disconnected from decision-making. Institutionalisation ensures that data and forecasting lead to action: aligning workforce supply with changing demographic needs, adapting services to new technologies, and integrating gender-responsive, equity-focused policies. For instance, the COVID-19 pandemic has highlighted the importance of "tailored gender-responsive measures to maintaining HCWF capacity" (Ziemann et al., 2023) and to counteract resignation and attrition (WGH, 2023).

Institutionalisation is essential for:

- Systematic planning – preventing reactive crisis responses.
- Continuous evaluation – adapting to shifting population needs, technologies, and political contexts.
- Supporting intersectorality – aligning health, education, and labour market policies.
- Embedding equity – ensuring diverse needs (gender, regional disparities, migration flows, etc.) are addressed.

### Pathways to institutionalisation

Different health system models institutionalise HCWF planning in different ways. These approaches can be grouped into centralised NHS models, decentralised/Nordic models, and Social Health Insurance (SHI) or hybrid models.

#### *Lessons from NHS models*

In tax-funded National Health Service systems, institutionalisation often involves a strong central authority with direct control over planning processes, which is linked to training, recruitment, and service delivery.

In England's NHS system, for example, planning is coordinated nationally and sub-nationally using a range of methods: horizon scanning, scenario generation, systems dynamics modelling, simulation, and policy analysis (EC SEPEN, 2021:125; Willis et al., 2018). NHS England currently works closely with the Department of Health and Social Care, producing regular action plans and aligning forecasts with training and recruitment.

Ireland, on the other hand, provides an example from an NHS system that is fully centralised (EU, Deliverable 7, 2025). The system demonstrates comprehensive multiprofessional HCWF planning aligned with social care, underpinned by strong political support and an emerging HCWF research base (EC SEPEN, 2021:83). It also highlights the importance of governance structures for advancing HCWF planning capability; for instance, maturity assessment was identified as a governance tool (EU, Deliverable 7, 2025). However, institutionalisation remains incomplete, as planning efforts are not yet fully embedded into legal frameworks.

The case of Malta (HEROES JA, 2020a), for instance, illustrates how a small country with centralised institutional NHS pathways organises their institutional capacities (Box 4). Planning is guided by structured and collaborative stakeholder dialogue covering all health professions and based on both quantitative and qualitative data (SEPEN, 2021:98). This dialogue informs a three-year workplan with annual evaluation and follows WHO Europe recommendations (WHO, 2022c). The country has further advanced institutionalisation through the adoption of a forecasting tool from the NIVEL Institute (Netherlands1), integrated workforce data from multiple national sources, and targeted training for senior decision-makers.

**Box 4 Malta**

**How WHO and the EU may support the institutionalisation of health workforce planning**

Malta has embraced a data-driven, evidence-based approach to health workforce planning to ensure a sustainable and high-quality healthcare system. This journey began in 2019–2020 with a WHO-led health workforce consultation meeting and workshop held in Malta, marking the beginning of a collaborative initiative. Funded by the WHO Regional Office for Europe under the Biennial Collaborative Agreement (BCA) 2018–2019 and framed within the Country Cooperation Strategy (CCS) 2016–2021, this effort aimed to strengthen national capacities in health workforce planning and forecasting with a focus on long-term sustainability and quality.

A significant milestone came in 2022, when the People Management Division within the Ministry for Health and Active Ageing launched Malta's first Health Workforce Strategy (2022–2030). This strategy aligns national efforts with EU Joint Action initiatives and World Health Organization (WHO) collaborations, marking a significant step toward institutionalising workforce planning.

A pivotal aspect of Malta's health workforce strategy was the adoption of a Health Workforce Planning and Forecasting tool from the Nivel Institute in the Netherlands. The WHO facilitated Malta's introduction to Nivel's experts and helped organise workshops and discussions. This tool, tailored to Malta's specific healthcare needs,

[1] Note that Netherlands (Kingdom of the) comprises six overseas countries and territories and the European mainland area. As data for this brief refer only to the European territory, the Report refers to it as the Netherlands throughout.

provides systematic data analysis and workforce projections. The dissemination of this tool across different government entities has initiated crucial discussions on strategies such as training expansion and task shifting to address workforce shortages.

As part of the EU Joint Action HEROES project, Malta is taking significant steps to centralise and harmonise workforce-related data within the Ministry for Health and Active Ageing. This initiative integrates information from key sources, including: (1) regulatory bodies, (2) Jobs Plus (national employment agency), (3) Identita' Malta (identity and immigration agency), and (4) educational institutions. By consolidating data through unique identifiers, Malta ensures accurate, up-to-date workforce intelligence for strategic decision-making.

Malta's success in institutionalising workforce planning hinges on stakeholder engagement and capacity building. Through funding from the EU Joint Action HEROES, Malta is training key decision-makers – including CEOs, Clinical Chairpersons, Senior Clinical Managers, and Human Resources leaders – to analyse workforce data and anticipate future needs.

Malta's approach – leveraging EU and WHO collaborations, forecasting tools, data integration, and stakeholder training – represents a major step toward sustainable workforce planning. While progress has been significant, long-term institutionalisation will require ongoing collaboration, adaptation, and refinement to meet the evolving challenges of the healthcare sector.

- Andrew Xuereb

### *Lessons from Nordic models*

Sweden illustrates adaptation in a Nordic, community-based health system with strong regional imbalances and challenges due to large remote and scarcely populated areas in the Northern parts. Sweden's constitution enshrines regional government independence, meaning that national level health policies must be translated into regional health service planning (Government Offices of Sweden, no year). As such, Sweden has shifted from focusing on workforce numbers to redesigning care delivery itself, using e-Health infrastructure, virtual appointments, and digital information-sharing to improve coverage in remote areas (EC SEPEN, 2021:122). This technology-driven approach expands HCWF planning capacity without solely relying on recruitment in underserved regions (Box 5).

**BOX 5 Sweden**

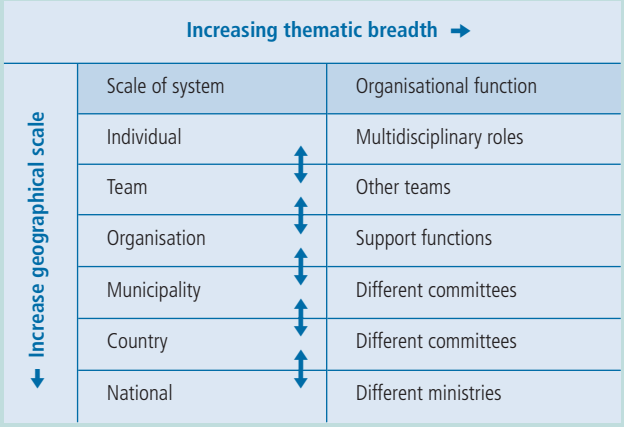
**How workforce planning is moving toward a learning system approach**

Over the next five years, Sweden's population aged 80 and above will increase by 30 percent. This demographic shift will significantly reshape healthcare, increase system complexity, and place even greater strain on an already stretched workforce. The current governance model – anchored in New Public Management (NPM) and focused on markets, managerial control, and performance metrics – has struggled to respond to these complex realities. NPM often undermines public services' ability to achieve meaningful human outcomes, leading to systems that are rigid, expensive, and less adaptive to changing needs.

Sweden is now embracing a more adaptive, patient- and staff-centred workforce planning approach, grounded in the principles of capabilities and 'learning systems' (Centre for Public Impact, 2024). A learning systems approach means embracing complexity, fostering trust, and placing continuous learning at the heart of planning, delivery, and governance. In this new model, workforce planning becomes a co-creation process where patients, professionals, researchers, policymakers collaboratively explore what matters most, what works best, and can we continuously adapt to new challenges. Instead of saying, 'You should implement what we've learned', the approach encourages, 'Use our learning as a starting point for your own'. The goal is to spread the practice of learning itself – not just predefined solutions.

The National Board of Health and Welfare is now exploring how to build multi-level learning systems that connect insights from local practices to national policy. This is not about scaling a fixed solution but about growing the collective capacity to learn, adapt, and act together. This approach is built on four key foundations: (1) understand the system, (2) co-design, (3) experiment, and (4) embed and influence.

In Sweden's decentralised healthcare system, learning capabilities must be developed both horizontally and vertically – across different levels of governance and professional networks. A key element will be strengthening system stewardship within the different parts of the system (see Figure below).




By adopting this learning approach, Sweden is pioneering a more adaptive and sustainable workforce strategy – one that responds to real-world challenges, values collaboration, and continuously evolves to meet the needs of an aging population.

- Åsa Olsson

Norway provides a further example of how countries can combine national agencies and independent bodies to align data, forecasting and strategy across a geographically and demographically diverse system (Box 6).

**BOX 6 Norway**

**Collaborative efforts for healthcare workforce planning**

Norway has one of the highest densities of healthcare workers in Europe, with 15 percent of its workforce employed in the health sector. However, demographic changes, including an ageing population and a stagnating workforce, pose significant challenges for the future. To address these concerns, Statistics Norway (SSB), the Norwegian government, and the independent Healthcare Personnel Commission have collaborated to enhance workforce planning and forecasting.

*Role of Statistics Norway (SSB)*

The SSB plays a central role by publishing forecasts on healthcare workforce supply and demand for 14 key professions. These forecasts are based on extensive registry data, including an employer-employee database. Government agencies, particularly the Norwegian Directorate of Health, use these projections to estimate the required number of healthcare graduates and inform discussions between the Ministry of Health and Care, the Ministry of Education and Research, and the Ministry of Finance as part of the state budget process.

*The Healthcare Personnel Commission's contribution*

Recognising the need for strategic workforce planning, the Norwegian government appointed an independent Healthcare Personnel Commission to analyse labour shortages and propose targeted policy measures. The commission consisted of participants from the municipalities responsible for primary health care, the specialist health care sector, various health professions, academia, and both employee and employer organisations, to name a few. The commission relied heavily on SSB's forecasts, concluding that the rapid expansion of the healthcare sector was unsustainable. They warned that continued growth would deplete other essential sectors of skilled labour and advised against reliance on international recruitment.

*Government response and policy development*

The Commission's findings generated significant national debate, and the Norwegian Government integrated several of its recommendations into the National Health and Coordination Plan (2024–2027). The health workforce is part of this white paper outlined measures in three key areas:

- Recruitment, qualifications, and skills development.
- Work environment and conditions.
- Task-sharing and workforce organisation.

Concrete actions include requiring assessments of how new policies affect healthcare worker demand, and prioritising the adoption of technology to reduce workforce pressures.

*Impact and future outlook*

The SSB's forecasts and the Commission's recommendations have significantly shaped workforce policy discussions, ensuring a coordinated approach across Norway's decentralised healthcare system. While the need for healthcare workers has been raised in previous years, it was only in the 2024 long-term economic outlook by the Ministry of Finance that labour market pressures – particularly in the health sector – were emphasised to this extent. For the first time, workforce competition was presented as the most pressing long-term challenge, underscoring the urgency of sustainable, cross-sector labour strategies. This shift highlights the growing importance of data-driven collaboration in securing a resilient healthcare system for Norway's future (Regjeringen.no).

- Christin Marsh Ormhaug

### *Lessons from SHI-based and hybrid systems*

In SHI and mixed systems, institutionalisation often relies on independent bodies that bridge government, professional associations, insurers, and training providers. This can reduce political influence and foster stakeholder trust but requires clear mandates and sustainable funding.

The Netherlands are characterised by their complex mix of SHI institutions with market elements, strong corporatist actors, state interventions and innovative health policy approaches (Box 7). Other SHI countries, such as Belgium and France, operate multi-stakeholder forecasting bodies under ministerial authority (PlanCad in Belgium; ONDPS in France). Germany, with its federalist SHI system, has no centralised independent body but instead a patchwork of regional monitors, federal committees, and national and regional SHI institutions.

**BOX 7 The Netherlands**

**Institutionalising health workforce planning: governance, stakeholder collaboration and evidence-based decision making**

The Netherlands offer a well-established model for institutionalised health workforce planning, where governance, technical modelling, and stakeholder collaboration are integrated to support evidence-based policy decisions on medical and paramedical workforce needs. Over the past 25 years, this system has continuously evolved to ensure a sustainable and well-distributed health workforce (OECD, 2024).

At the heart of workforce planning is the Advisory Committee for Medical Manpower Planning, Capaciteitsorgaan (ACMMP), an independent body responsible for supporting the government on medical student intakes and postgraduate training allocations (OECD, 2024). What sets ACMMP apart is its inclusive and participatory governance structure, ensuring equal representation and voting power among key stakeholders (OECD, 2024): medical professionals (doctors, dentists, and paramedics), training institutes, and health insurance companies.

*Stakeholder engagement and collaboration*

This transparent, collaborative process fosters trust, shared ownership and accountability among stakeholders. Input is gathered not only at a broad level but also through specialised Chambers, which are responsible for making recommendations based on profession-specific insights (OECD, 2024a).

*Evidence-based decision-making process*

Health workforce planning follows a three-year cycle ensuring continuous learning and adaptation. ACMMP's recommendations to the government are highly data driven integrating both quantitative and qualitative evidence. For the technical expertise, the ACMMP collaborates with semi-governmental organisations, such as NIVEL, to conduct forecasting and continuously refine the forecasting model (ACMMP, 2013, OECD, 2024). Key elements of the forecasting model include:

- Future supply and demand projections factoring in healthcare needs, population growth and workforce working hours.
- Stakeholder and expert insights on expected changes in healthcare demand.
- Scenario analysis and policy simulations, allowing decision makers to anticipate different workforce needs.

The Government uses ACMMP's recommendations to allocate budgets for training programs, ensuring that investments align with projected workforce needs. ACMMP then monitors workforce developments over the next three years to refine future recommendations (OECD, 2024).

The Dutch approach demonstrates how strong governance, stakeholder engagement, collaboration and data-driven forecasting can create a sustainable, adaptable, and institutionalised system (OECD, 2024). By continuously evolving and collaborating internationally on various EU-level projects, the Netherlands not only secures its own workforce sustainability but also contributes to global efforts in strengthening health workforce planning capacity.

- Ines Mogami

## Legal and regulatory frameworks for institutionalisation

### *Legal frameworks make institutionalisation durable and enforceable*

Legal and regulatory frameworks are the foundation for making HCWF planning a permanent, non-negotiable part of health system governance. They provide the authority, legitimacy, and procedural clarity necessary for sustained, systematic action. These legal frameworks are important for several reasons. First of all, laws give HCWF planning bodies the statutory power and authority to collect and manage sensitive workforce data, set methodologies, and issue recommendations. Secondly, legislation secures planning functions beyond electoral cycles or changes in political leadership thereby ensuring continuity. Thirdly, clearly defined legal mandates make it possible to evaluate performance, enforce compliance, and hold institutions responsible for results and thus guaranteeing accountability. Finally, statutes can require alignment across health, education, and labour market policies, avoiding duplication or contradictory measures helping to integrate policies across various sectors. Without a legal mandate, planning efforts risk being informal or temporary and thus heavily dependent on the political will of current leaders. This can lead to discontinuity when priorities change.

Legal frameworks build the groundwork for institutionalization by:

- ***Defining institutional mandates for HCWF planning and forecasting*** implies that the agency, committee, or independent body responsible for planning is specified and the scope is defined.
- ***Establishing a statutory authority for data collection and integration*** allows for the legal right to access registries, educational data, employment records, and migration data and specifies standards for interoperability and confidentiality.
- ***Mandating regular forecasting cycles*** establishes mandatory intervals for forecasting (e.g., 3-year ACMMP cycle in the Netherlands).
- ***Linking planning outcomes to education and training quotas*** mandates that forecasts inform admission quotas and curriculum design (e.g., PlanCad in Belgium its legal framework links directly to reimbursement and professional regulation) (EU SEPEN, 2021:47).
- ***Aligning with EU directives***, such as the EU Professional Qualification Directive, facilitates compliance with WHO's Global Strategy on Human Resources for Health: Workforce 2030 (WHO, 2016).

**BOX 8 Points to consider when institutionalising HCWF planning and forecasting:**

- *Strengthening policy implementation through governance*

  Governance is the connection between planning and implementation (Greer et al., 2016, 2019). Clear governance arrangements assign roles, responsibilities, and accountability, ensuring policies are not only designed but actively carried out and refined over time. Dedicated structures enable adaptation to emerging priorities, such as new competencies in response to technological change or public health emergencies (Kuhlmann et al, 2025; Williams et al., 2024; Williams et al., 2020).

- *Embedded systematic planning*

  Sustainable institutionalisation requires moving from ad-hoc responses to structured, long-term workforce strategies. This includes planning for demographic shifts, growing service demands, and competition for HCWs across sectors and borders. Institutionalised planning addresses both shortages and surpluses, aligning education and training capacity with projected needs (WHO Europe, 2022a; Bucharest Declaration, 2023).

- *Ensure continuous data-driven decision-making*

  Sustainable systems depend on high-quality, regularly updated data that capture evolving realities such as HCW mobility, migration, mental health, and gender dynamics. Institutionalisation must include mechanisms for ongoing evaluation, new indicator development, and integration of both quantitative and qualitative insights (WHO Europe, 2022d).

- *Link workforce planning to health outcomes*

  Sustainable HCWF planning must also improve health equity, quality, and safety. Institutionalised processes can align workforce deployment with service delivery reforms, for example by reinforcing primary healthcare (Rajan et al., 2024; Kuhlmann et al., 2024c) or building capacity in emerging specialised areas, for instance, in response to technological innovation and artificial intelligence (BeWell, 2025).

- *Build for long-term sustainability and health system resilience*

  Workforce training, recruitment, and deployment take time to develop and produce results. Institutionalisation helps secure the political and financial commitments needed to maintain investment in line with future health needs, reducing reliance on reactive crisis management and fostering preparedness for emerging challenges (McPake et al., 2024).

- *Promote equity and inclusion*

  Sustainability also depends on fairness. Institutional frameworks should address gender inequalities, ensure inclusion of vulnerable groups, and promote equitable distribution of HCWs across regions and settings.

Ultimately, there is no health without a workforce (Campbell et al., 2014). Meeting this complex demand for planning and forecasting requires strong institutions and governance that are capable of coordinating sectoral strategies across health, education and labour market sectors; public and private actors, and diverse occupational groups. Institutionalisation is the foundation for building a workforce that can deliver high-quality, equitable, and sustainable healthcare now and in the future.

## 3. Building capacity for HCWF planning and forecasting

Institutionalisation without capacity risks creating hollow structures. Effective health workforce (HCWF) planning and forecasting requires more than robust methodologies, in fact, they depend on the capacity of institutions, systems, and people to generate, interpret, and apply evidence in ways that guide policy and practice. Capacity (defined in Box 3) can be built in different ways: by expanding the mandates, resources, and coordination of existing institutions, or by creating new bodies where current structures are weak or fragmented. Regardless of the approach, the goal is to establish sustainable capabilities that can adapt to evolving health system needs.

### Tools, skills, knowledge and infrastructure are the cornerstones to capacity building

Among the most widely used tool is the Health Labour Market Analysis (HLMA), which examines supply–demand dynamics, skills requirements, and workforce distribution issues. The WISN tool provides staffing requirements based on actual workload data, while the AAAQ framework assesses workforce availability, accessibility, acceptability, and quality (Correia et al., 2020; WHO Europe, 2022a; WHO, 2022; Zapata et al., 2023; Azzopardi-Muscat et al., 2023). More advanced approaches include scenario modelling and simulation to project demand under varying demographic, economic, and policy conditions, and increasingly, AI-driven analytics to process large datasets and refine forecasting accuracy.

#### *Capacity is more than tools – it requires skills, infrastructure, and people*

Tools alone are insufficient without a skilled workforce capable of interpreting and applying them. Planning teams require expertise in policy analysis, social science, demography, and health economics, alongside statistical modelling, informatics, and IT specialisation. Qualitative research skills are equally important to capture the "human face" of the HCWF (Kuhlmann et al., 2020) – understanding motivation, wellbeing, gender equity, and retention challenges – aspects that quantitative models alone cannot fully reflect.

These skills must be supported by a solid infrastructure. Comprehensive national registries of licensed health professionals, integrated Health Workforce Information Systems (HRHIS), and interoperable IT platforms are critical for ensuring timely, accurate, and actionable data. The best systems enable real-time data sharing between ministries, training institutions, employers, and regulators, creating a living evidence base that supports responsive decision-making. Together, these capacities form the backbone of effective HCWF planning, ensuring that institutional structures are not just symbolic, but operationally capable of delivering sustainable workforce strategies.

#### *Countries build capacity in diverse ways, shaped by system context*

While these core components, the right tools, skilled personnel, and robust infrastructure, define what capacity looks like in principle, their value is only realised when they are actively developed, maintained, and adapted to local contexts. Across Europe, countries have taken different paths to building this capacity, shaped by their governance models, resource availability, and specific health workforce challenges. The following examples illustrate how diverse systems have approached the task, highlighting both innovative solutions and persistent limitations in turning institutional potential into operational strength.

Malta, for example, adopted the NIVEL forecasting tool (Netherlands), integrated workforce data from regulatory bodies, employment agencies, immigration authorities, and education institutions, and trained senior decision-makers to interpret and act on forecasts (Box 4). Sweden uses e-health infrastructure, virtual appointments, and digital information-sharing to mitigate regional workforce shortages, supported by a multi-level "learning system" approach (Box 5). Statistics Norway produces profession-specific forecasts used in national budget planning, while the independent Healthcare Personnel Commission translates them into policy recommendations (Box 6). And the ACMMP in the Netherlands works closely with NIVEL and other research bodies to refine its models, integrating qualitative and quantitative inputs into a three-year cycle of recommendations (Box 7).

**BOX 9 Points to consider for capacity development**

- ***Developing advanced, data-driven models*** that make use of demographic, epidemiological, and workforce data to predict future needs, balance supply and demand conditions in an adaptive and flexible manner and integrate qualitative indicators and research data into statistical analysis.
- ***Establishing multiprofessional planning*** and including new groups (e.g., Maier et al., 2018). These approaches should move beyond the medical and nursing professions and include other HCWs as well as higher and lower-level HLM segments. Sex/gender compositions and skill-mix changes should also be considered.
- ***Integrating interprofessional and intersectoral cooperation*** by engaging education, labour market, and social care sectors to improve evidence quality and ensure planning reflects the full ecosystem affecting HCWF supply and demand (Caffrey et al., 2023).
- ***Applying dynamic, transformative approaches*** that align workforce planning with changes in the organisation of care, health priorities, migration flows, disruptive events, and digital innovation, ensuring adaptability over time.
- ***Strengthening participatory governance*** by involving a wide range of stakeholders—governments, professional bodies, unions, training providers, civil society – in all stages of planning to ensure relevance, legitimacy, and buy-in (Greer et al., 2019).
- ***Promoting equity*** to reduce regional disparities within and between countries that might include sectoral imbalances, and existing social inequalities (i.e., gender-based, ethnic, sexual, and other forms of inequalities and their intersections) (WHO-HSPR, 2022).

- ***Focusing on the 'human side' of the workforce*** (Kuhlmann et al., 2020) by considering employment conditions, workplace safety, mental health, and migration realities, integrating qualitative data and gender-sensitive indicators into planning. This point also supports the use of qualitative data and indicators (e.g., Byrne et al., 2023; Kluge & Azzopardi-Muscat, 2023).
- ***Linking national planning to global and European frameworks*** by aligning with international recommendations to foster knowledge exchange, coordinate cross-border workforce strategies, and strengthen resilience against political and social pressures that threaten HCWF stability.

By combining these elements, countries can build capacity that is technically sound, socially responsive, and politically sustainable. Strong capacity ensures that planning and forecasting are not isolated technical exercises, but integral, adaptable processes embedded within health system governance and thus capable of meeting population needs.

## 4. How to govern HCWF planning and forecasting?

Governance determines who makes decisions, how they are made, and how they are implemented. In the HCWF context, governance connects political leadership, institutional mandates, stakeholder networks, and implementation capacity. It sets the rules of engagement for translating evidence into practice, aligns diverse actors toward shared goals, and ensures accountability.

Governance (defined in Box 3) is the elephant in the room – 'crucial to successful policy-making and implementation' – yet rarely assessed, invested in or systematically strengthened (Greer et al., 2019:5). As a result, the importance of governance for effective implementation of planning and forecasting is underresearched and very little information is available. Much of the evidence comes from individual country cases or COVID-19 pandemic reviews (Caffrey et al., 2024; Williams et al., 2024; Wismar and Goffin, 2023).

### Political leadership and appropriate funding are the backbone of governance

Political will is vital to set priorities based on population health needs, provide the necessary infrastructures, and allocate funding for HCWF planning. Leadership is also essential for balancing diverse stakeholder interests and improving equity. While some leadership functions can be delegated to independent bodies, success depends on strong statutory powers, harmonised governance measures, and secure funding.

Long-term funding is critical, yet often lacking. In NHS systems, funding is especially vulnerable to political change. Independent bodies, multi-stakeholder networks, and academic involvement can help, but they do not replace the need for committed, accountable government leadership.

Leadership must also promote new narratives for HCWF planning, moving beyond crisis response toward the co-benefits of effective implementation (Greer et al., 2024) – linking resilient health systems, worker wellbeing (BeWell, 2025; Kuhlmann et al., 2020, 2024b), labour market stability, and economic growth (Caffrey et al., 2023).

### Multi-level, participatory governance is the core of effective HCWF implementation

Effective governance requires a multi-level approach (Greer et al., 2022a) that connects national, regional, and international levels (Wismar and Goffin, 2023), aligns capacities across sectors (health, education, labour), and addresses the needs of diverse HCW groups (Kuhlmann et al., 2021). Multi-level participatory governance is central to implementing HCWF planning, enabling countries to build more resilient and sustainable workforces (Azzopardi-Muscat et al., 2023).

### Policy dialogues and improved stakeholder involvement strengthen participatory governance

Policy dialogue helps strengthen participatory governance and may be implemented in different institutional settings, following either top-down or bottom-up approaches. A top-down approach sustained through an institutional stakeholder dialogue can be seen in the following cases:

- The Netherlands' independent Capacity Body (EU SEPEN, 2021:111; see also Box 7).
- Malta's NHS bodies with triennial plans monitored annually (Box 4) (EU SEPEN, 2021:98; WHO Europe, 2022b).
- Ireland's evidence-focused stakeholder forums (Bruen & Brugha, 2020).
- Czechia's rapid assessment engaging 39 stakeholder groups (WHO Europe, 2025).

Policy dialogue may also be *organised bottom-up based on networks* and implemented in centralised as well as in decentralised health systems. Here, examples come from England's NHS, where data creation and modelling were aligned with implementation based on practical stakeholder experience, creating new transformational capacities (Willis et al., 2018) and Germany's decentralised SHI system. In this case, regional health workforce monitors, for instance, in Rhineland-Palatinate and the Nursing Monitor in Hesse (IWAK, 2025), connect monitoring with stakeholder-driven policy (Kuhlmann et al., 2016).

Participatory governance can expand to include new stakeholders, such as non-health professionals (e.g., computer scientists, engineers, data scientists) (Frenk et al., 2022) and private-sector education providers (Fieno et al., 2016). However, the inclusion of new policy entrepreneurs also brings risks – as seen in the US and in some right-wing populist governments in Europe, where public health goals and HCWF stability are threatened.

### Coordination and collaboration connect sectors and professional groups

Coordination and collaboration are the ties that align institutions and stakeholders spanning across macro- and micro-levels of governing, while transsectoral and multi-professional interventions together with strong leadership are the cornerstones on which to build the implementation of HCWF planning outcomes.

Countries have expanded their analytical capacities and involved new professional associations to improve skill-mix and planning (e.g., Italy, the Netherlands [Box 7], Norway [Box 6], Sweden [Box 5]). This has increased the need for coordination, particularly to connect national and regional planning, strengthen subnational capacity, and improve equity.

Coordination can be improved by either delegating leadership to independent bodies (Netherlands, some other SHI countries) or by using NHS institutions to integrate planning and coordination (Ireland, England, Malta).

Research coordination is equally important. While Ireland, Sweden, and England's NHS offer positive examples, most countries fail to integrate qualitative and quantitative evidence effectively, and lessons from COVID-19 planning remain underused (Williams et al., 2024; Burau et al., 2022, 2024).

Finally, coordination must also operate internationally, facilitating an interface between global policy and national implementation – as shown by Malta's use of WHO and EU guidance (Box 4).

### Research evidence and science must guide planning and implementation

Research is the basis for monitoring, forecasting, and planning models, and is essential for evidence-based policy (George et al., 2018; Kuhlmann et al., 2018). Many countries have scaled up HCWF research, driven by the COVID-19 pandemic (WHO Europe, 2022), but they still face a gap between evidence production and policy use (WHO, 2022:xxxvii summary; Kuhlmann et al., 2024a; Correia et al., 2025). Closing this gap requires governance structures capable of coordinating multi-sector, multi-stakeholder networks.

In is in such cases where academic institutions can be particularly helpful. These can act as independent governing bodies (e.g., ACMMP in the Netherlands [Box 7]), partners to government (e.g., NHS systems in Ireland, England, Portugal; regional monitors in Germany) or policy entrepreneurs expanding education/training capacity. Further, developing HCWF research as an independent academic field is a key condition for effective governance (George et al., 2018; Kuhlmann et al., 2018).

### EU regulatory frameworks and international collaboration strengthen country action

The EU has invested in HCWF research and data (SEPEN, 2021; HEROES Joint Action, 2025), helping countries improve analytical capacity and institutionalisation. These efforts should be sustained and expanded by including more Member States in the actions as well as understanding the barriers to collaboration that exist, and by strengthening governance and implementation support. The EU must continue to support countries in their efforts to sustain change through financial and technical support.

Investing in EU HCWF governance and international collaboration needs stronger leadership, political will, and support across Member States including sustainable funding and research programs. Lack of support for the HCWF exacerbates not only the HCWF crisis and weakens national health system capacities to respond effectively to population needs and multiple crisis, it may also threaten trust in public institutions and the capacity of both Member States and the EU to serve population health needs. Investing in HCWF governance and harmonising existing tools must therefore become an EU policy priority that stretches beyond sectoral programs and budgets. International support mechanisms can be exploited to boost effective work across sectors (Caffrey et al., 2023).

EU tools, such as the Professional Qualifications Directive, should be updated to cover all HCWs, not just five regulated professions. Labour market regulation should be improved and more harmonised monitoring and planning systems developed (Wismar and Goffin, 2023; Maurer et al., 2023). Planning must integrate equity, especially gender equality and the inclusion of migrant/refugee HCWs.

The WHO Europe's "Time to Act" report highlights leadership capacity for governance and planning (WHO, 2022:Action 7). However, few countries systematically use WHO tools for capacity assessment and strategy development (see Malta, Box 4).

**BOX 10 Points to consider to create and maintain strong governance**

- ***Creating multi-stakeholder institutions*** to coordinate professional associations, academia, and policymakers, grounded in trust, equity, and gender equality.
- ***Aligning and coordinating regulatory agencies*** across health, education and labour sectors.
- ***Integrating education policy*** with workforce planning, linking forecasting to training quotas and program design.
- ***Engaging regional stakeholders*** to address disparities and adapt strategies to local realities.
- ***Integrating international expertise*** to exchange knowledge, foster policy learning and support EU and global collaboration.

## 5. Implementation considerations

Turning institutionalisation, capacity-building, and governance frameworks into real-world impact requires careful implementation strategies. Lessons from European experiences (Boxes 4-7) and from broader evidence on skill-mix innovations show that implementation succeeds when it is systematic, multi-level, and sustained rather than ad hoc (Winkelmann et al., 2022). The following considerations summarise key priorities for policymakers.

### Anchor reforms in legal and institutional frameworks

Institutionalisation is sustainable only when embedded in law and supported by statutory mandates. Clear legal frameworks define responsibilities, scopes of practice, and accountability, that ideally shield planning processes from short-term political cycles. The Netherlands' Capacity Body (Box 7) demonstrates how legally mandated forecasting cycles safeguard continuity, while Belgium's PlanCad ties legal mandates directly to training quotas. By contrast, Germany's fragmented arrangements highlight risks when responsibilities are dispersed without systematic coordination (Kuhlmann et al., 2016; Wismar & Goffin, 2023).

### Secure sustainable funding and supportive payment models

Sustainable, multiannual funding is essential for planning institutions and for implementing capacity reforms. Financing arrangements should reward training, role expansion, and multi-professional teamwork. The Netherlands (Box 7) secures funding through statutory mandates, while Malta (Box 4) has drawn on EU and WHO support. Evidence shows that without aligned financing, even technically robust plans struggle to achieve impact (WHO, 2022a; Azzopardi-Muscat et al., 2023).

### Invest in multi-level governance and stakeholder engagement

Implementation succeeds when governance connects national and subnational levels, and when stakeholders are meaningfully engaged. Evidence shows that reforms are more sustainable when professional associations and providers are directly involved in designing task shifting, role redesign, and planning processes (Bruen & Brugha, 2020; Willis et al., 2018; IWAK, 2025). In Malta (Box 4), stakeholder engagement was strengthened by drawing on WHO and EU frameworks, while in Ireland, stakeholder forums have supported alignment across professions.

### Build capacity through education, infrastructure, and workforce planning

New institutional arrangements require skilled personnel, interoperable data systems, and interprofessional training. Without investment in education and continuous professional development, reforms stall (Maier et al., 2022). Sweden (Box 5) shows how regional learning systems leverage IT infrastructure, while Malta (Box 4) highlights the importance of external technical assistance to build national registries. National registries, HRHIS, and digital platforms are equally critical (see Policy Brief 2).

### Integrate skill-mix and team-based innovations into planning

Planning should not only anticipate workforce numbers but also roles and competencies. Evidence from skill-mix innovations shows that task shifting, relocation of care, and coordination roles (e.g., case managers, patient navigators) improve efficiency and outcomes (Dubois & Singh, 2009; Maier et al., 2022). Embedding these models into workforce planning makes forecasts more responsive to ageing, chronic disease, and multimorbidity. For example, Norway's Commission (Box 6) explicitly links workforce projections with future skill needs, while Sweden (Box 5) emphasises teamwork in long-term care.

### Monitor, evaluate and adapt through learning systems

To be effective, implementation must be adaptive, with regular evaluation of forecasting models, planning processes, and governance arrangements. Sweden's learning system approach (Box 5) demonstrates how iterative monitoring allows planning to evolve with changing needs. Broader evidence from skill-mix reforms confirms that feedback loops, ie. monitoring new roles, documenting outcomes, and scaling up what works, are essential for success (Greenhalgh et al., 2004; Maier et al., 2022).

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## Appendix

### Rapid scoping review, methodology

A rapid scoping review was carried out, drawing on the methodology described by Arksey and O'Malley (2016) that comprises a data base search (e.g., pubmed), grey literature and hand search, documents, and expert information. Against the backdrop of extensive information from systematic reviews published elsewhere, EU reports (EU SEPEN, 2021), and the HEROES Joint Action material, the search strategy for this policy brief was limited to more recent research published from 2015 onwards and the research questions; the focus was on the institutions for health workforce planning.

A pubmed search was carried out on 5 February 2025.

- Search term: *(health workforce planning Europe) AND (institutions)* gained 741 results; after reviewing the titles (if necessary also the pubmed summaries), 19 articles were selected for an abstract review, and 10 of these were finally included in the analysis following a full text review. Exclusion criteria were: articles published before 2015, not available in English, with a focus on a single profession/workforce group and/or one or more countries outside Europe (with few exceptions that served as case study to highlight broader issues), commentaries without original research/literature reviews, study protocols without results, and statements from professional associations and interest groups.
- In addition, the search term was specified: ((((health and care workforce) AND (monitoring)) AND (planning)) AND (Europe)) AND (forecasting); 18 results were reviewed applying the same review and exclusion criteria; after excluding 1 duplicate already identified in the previous search, 2 articles were selected for full text review and included in the analysis.

An additional hand search made use of bibliographies of relevant articles, information from websites and documents of the WHO and the European Observatory on Health Systems and Policies, project websites and reports of HEROES and other relevant EU HCWF projects, and additionally, website material from national/regional governments. Expert information and selected country case studies from the HEROES members provided further insights.

The selected material was analysed, using qualitative thematic analysis, and considered for the country analyses and the development of policy recommendations.

The country cases primarily serve to illustrate a number of available options to govern and institutionalise HCWF planning, forecasting and monitoring. The case study design does not intent to provide a comparative overview of health systems and HCWF characteristics in the EU.

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